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(12) **United States Patent**  
**Dang et al.**

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(54) **WAFER DEBONDING USING  
MID-WAVELENGTH INFRARED RADIATION  
ABLATION**

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324/762.05; 428/336, 457, 408;  
156/753; 438/458, 406, 455, 160

See application file for complete search history.

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(56) **References Cited**

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(\*) Notice: Subject to any disclaimer, the term of this  
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(22) Filed: **Mar. 27, 2014**

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(52) **U.S. Cl.**  
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(2013.01); **H01L 21/302** (2013.01);  
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(57) **ABSTRACT**

Structures and methods are provided for temporarily bond-  
ing handler wafers to device wafers using bonding structures  
that include one or more releasable layers which are laser-  
ablatable using mid-wavelength infrared radiation.

(58) **Field of Classification Search**  
CPC ..... H01L 51/003; H01L 21/76251; H01L  
21/2007; H01L 21/02002; H01L  
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**14 Claims, 8 Drawing Sheets**

